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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,973	12/31/2001	Jeong Ho Lee	P21833	5445

7055 7590 05/06/2003

GREENBLUM & BERNSTEIN, P.L.C.  
1950 ROLAND CLARKE PLACE  
RESTON, VA 20191

EXAMINER
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KRISHNAMURTHY, RAMESH

ART UNIT	PAPER NUMBER
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3753

DATE MAILED: 05/06/2003

3

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/029,973

Applicant(s)

LEE ET AL.

Examiner

Ramesh Krishnamurthy

Art Unit

3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 December 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 - 10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 - 10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All   b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other: \_\_\_\_\_

Art Unit: 3753

This office action is responsive to communications filed 12/31/2001.

**Claims 1 – 10 are pending.**

1. Figure 1, 2A – 2D, 3A and 3B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The following suggestions are offered to the applicant to place the claims in better form: In claim 4, line 3, it is suggested that "going up to the upper part from below part" be replaced with - - distance from the hole increases - -.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

Art Unit: 3753

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1 – 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Prior Art admitted to by the applicant (Figs. 1 – 3B & paragraphs (02) – (21) in the specification) in view of Brewer (US 3,788,071).

The prior art admitted to by the applicant (Figs. 1 – 3B & paragraphs (02) – (21) in the specification) discloses a valve plate (13) having an inlet hole (13a) that draws in a low pressure fluid by an open-and-shut operation driven a piston (12) movement, and a discharging hole (13b) that discharges a high pressure fluid through an open-close operation; and

A check valve (14a) coupled to the inlet hole and a check valve (14b) coupled to the discharge hole of the valve plate (13).

The prior art admitted to by the applicant (Figs. 1 – 3B & paragraphs (02) – (21) in the specification) discloses the invention claimed with the exception of disclosing the check valve of having a helical plate spring structure.

Brewer ('071) discloses a check valve (44) having a helical plate spring structure (See Fig. 4) that allows a proper operation of the valve through a construction that provides a positive checked position (i.e. closed position, Fig. 2) and a low-restriction flow in the open position (Fig. 4).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have replaced the inlet plate (14a) or the discharge plate (15) with their respective check valves, with a check valve having a helical plate spring

structure for the purpose of obtaining a proper operation of the valve through a construction that provides a positive checked position (i.e. closed position) and a low-restriction flow in the open position, as recognized by Brewer.

Regarding claim 2, it is noted that the check valve opens or closes based on pressure differences.

Regarding claim 3, it is noted that the check valve (44) in Brewer is coupled to a supporting plate (76) in which an inlet member or a discharging member (74) is disposed.

Regarding claim 4, it is noted that the structural shape of the check valve is such that the width becomes narrower (Fig. 4 in Brewer) as distance from the hole (opening in plate (76), for example) increases.

Regarding claim 5, it is noted that in the combination of Brewer and the prior art admitted to by the applicant (Figs. 1 – 3B & paragraphs (02) – (21) in the specification), the movement of each floor or flexible arm (as referred to in Brewer), is caused by the piston movement.

Regarding claim 6, it is noted that the device according to the combination of Brewer and the prior art admitted to by the applicant (Figs. 1 – 3B & paragraphs (02) – (21) in the specification) being applicable to fluid compressor/pumps in general, would also work with the fluid being a refrigerant.

Regarding claim 7, it is noted that the prior art admitted to by the applicant (Figs. 1 – 3B & paragraphs (02) – (21) in the specification) discloses a head cover (16) with a flow channel formed therein.

Art Unit: 3753

Regarding claim 8, it is noted that in the device according to the combination of Brewer and the prior art admitted to by the applicant (Figs. 1 – 3B & paragraphs (02) – (21) in the specification) the check valve (44) (disclosed by Brewer) prevents flow in one direction while permits in an opposite direction (Col. 2, lines 27 – 53).

Regarding claim 9, it is noted that the helix shape of the helical plate spring check valve (44) is a circular helix shape.

Regarding claim 10, it is noted that claim 10 is a combination of claims 1 and 7 whose individual rejections have been set forth above.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Fairhurst discloses a spring-biased valve for a compressor. Iversen discloses a valve plate –spring combination for use in a compressor. Lyford discloses an integrally formed valve-spring combination. Knapp discloses a valve mounting for refrigerator compressors. Lindsey discloses a spring-biased check valve. Mecorney discloses a pressure relief device in which the valve is integrally formed with a spring element. Decker discloses a fluid flow regulator in which the spring acts as a flow restrictor. Esper discloses a spring having various configurations and functioning as a valve element. Miura et al. discloses a check valve. Katsura discloses a check valve integrally molded with a biasing spring.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramesh Krishnamurthy whose telephone number is (703) 305 - 5295. The examiner can normally be reached on Monday - Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael P. Buiz, can be reached on (703) 308 - 0871. The fax phone number for the organization where this application or proceeding is assigned is (703) 872 – 9302 and for after-final communications, the fax phone number is (703) 872 9303.

Application/Control Number: 10/029,973

Page 6

Art Unit: 3753

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 - 0861.

A handwritten signature in black ink, reading "Ramesh Krishnamurthy". The signature is written in a cursive style with a large, stylized 'R' and a long, sweeping tail on the 'y'.

Ramesh Krishnamurthy

Examiner

Art Unit 3753

May 2, 2003